Exercise treadmill testing

Should exercise treadmill testing be provided in the emergency department?

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ETT cannot rule out coronary heart diseases; however it has a prognostic value that exceeds other tests

Acute chest pain is responsible for over half a million attendances per year at emergency departments in the UK.¹ Around 7% of such patients discharged home from emergency departments have prognostically significant myocardial damage.² Many others are discharged without a clear diagnosis. It, therefore, is clear that patients presenting to the emergency department with chest pain remain a management challenge.

The chest pain unit (CPU) uses early cardiac markers and exercise treadmill testing (ETT) to provide an effective and cost-effective way of managing these patients.³ Although many emergency departments use early cardiac markers to exclude a cardiac event, few hospitals use immediate ETT to risk stratify. There are several possible reasons for this. Having a sensitivity of 78% and a specificity of 70%⁴ in practice means that 22% of patients with coronary heart disease will have a negative ETT, whereas 30% of patients without coronary heart disease will have a positive test and will require angiography. Anecdotal evidence reveals concerns regarding the safety and feasibility of ETT in the emergency department, particularly with regard to the risk of testing patients with unstable angina. Some commentators have therefore questioned the role of ETT in the emergency department.⁵

Concerns regarding ETT generating a large number of false positives that require angiography may not be realised in practice. A recent randomised trial comparing CPU with routine care showed that, although CPU care doubled the

proportion of patients receiving ETT, this did not lead to any change in the rate of referrals for angiography.³ This may be because clinicians interpret ETT results in the light of clinical information and only refer those patients with a definite, strongly positive ETT for angiography.

Although ETT cannot rule out coronary heart disease, it has a prognostic value that exceeds other tests. Recent data⁶ suggest that a positive ETT predicts a sixfold increase in adverse events over the 6 months following attendance. This may allow more appropriate referral for angiography, even if referral rates are unchanged.

Evidence from the US suggests that concerns about ETT and unstable angina are unfounded. Immediate ETT of low-risk patients with chest pain who would otherwise have been admitted is an effective way to risk stratify this group into patients who can be discharged and those who require admission.⁷ Overall, the ETT is a relatively safe procedure. It has a mortality rate of 1 in 50 000 and non fatal myocardial infarctions occur at a rate of <4 in 10 000.⁸

Evidence from Sheffield suggests that ETT in the emergency department is feasible in the UK. Since 1999, the CPU based in the emergency department has used the ETT as an integral part of its protocol. The chest pain nurses, all of whom had cardiology experience, undertook 1 week of training under supervision in the cardiorespiratory department. Subsequently, the nurses have supervised >2000 tests with no adverse event or complaint.

All the above evidence relates to ETT from a departmental viewpoint. What about the patient? Quality of life seems to have improved and psychological symptoms seem to have reduced after the CPU assessment with ETT. This may be due to a number of reasons, but feedback from patients suggests that a negative ETT shortly after presentation provides valuable reassurance.⁹

ETT performed in the emergency department therefore has a substantial prognostic value, does not increase the workload of the cardiology department, is safe and feasible and, most importantly, patients seem to value it. Is it time that we made ETT a part of emergency department assessment?

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